went on to speak of the different animals which thrive best in captivity, taking each order of each of the great classes of the vertebrata separately, and pointing out that whilst some, as the Carnivora, thrive well in confinement, others, as the Insectivora, can hardly be kept in a menagerie at all.

On the following Friday Mr. Sclater commenced the first of four lectures On the Geographical Distribution of Mammalia. A fauna constituting the animals inhabiting a country, and a flora its plants, the lecturer went on to illustrate the fundamental law that the animals and plants found in far distant countries are usually different, and that those of near countries closely resemble one another. We find the animals in France much like those in England, those in Ceylon much less so, and those in Australia as different as possible. It might at first sight be thought that difference of climate caused the differences that are observed in geographical distribution, but that such is not the case is proved without difficulty by taking different countries in the same latitude and with a similar climate and comparing them. For instance, on and near the equator we have Borneo, part of Africa, and the country bordering the Amazons; nothing can be more different than their faunas, and yet they are similarly circumstanced, so far as temperature and climate are concerned. So the polar seas of the northern and southern hemispheres are very different as regards their animals, although nearly identical in climate. The auks and seals of the one are replaced by the sea lions and penguins of the other. The faunas of the Himalayas and of the Andes, mountains both in hot countries, are very different also.

The meaning of the terms "specific area" and "generic area" was then explained. A species, the aggregate of similar individuals, has an habitat or area of distribution which is definitely circumscribed. In some animals this area is large, as in the case of the lion; in others, as in the case of the aye-aye of Madagascar, it is extremely limited. Among birds this limitation, strange as it may appear, is sometimes extreme; on each of the two nearly adjoining mountains of Pichincha and Chimborazo there are species of humming-birds found, which occur nowhere else. The area which includes all the areas of the species of a genus forms a generic area. These areas are continuous, or were so at one time; physical changes having sometimes intervened to produce an apparent interval.

From these observations it is evident that the locality in which an animal is found is as important a fact in estimating its individuality as are its internal structure and general configuration. This point is frequently but too little taken into account.

The lecturer, having said thus much on the general subject, proceeded to show how the class of Mammals was to be distinguished from the other classes of Vertebrates, and stated that for geographical purposes the mammalia, or those animals which suckle their young, might be most conveniently divided into terrestrial and aquatic. Our knowledge respecting the former of these sections is, as might be imagined, much greater than of the latter; nevertheless, within the last few years the aquatic mammalia have received considerable attention, and have become much better known.

(*To be continued.*)

NOTES

THE magnificent bequest of 10,000*l.* has been made by the late Mr. E. R. Langworthy to the Owens College, Manchester, for the purpose of developing the chair of Experimental Physics. A splendid opportunity is thus afforded to the Professor of Physics in Owens College not only to advance original research in connection with that subject, but also of teaching the students of his class in the only effectual way by which physics can be taught. Physics, in short, can now be placed on the same footing in that University as chemistry. The terms in which the bequest is made are so forcible and clear that they deserve to be quoted here:—"I bequeath to the trustees of the Owens College ten thousand pounds, and I desire that the same may be applied by them as they may think best in order to establish in connection with that institution a professorship of Experimental Physics. It being my wish that students may be instructed in the method of experiment and research, and that Science may be advanced by original investigation. And I also desire that the professor from time to time appointed may be selected on account of his knowledge having been especially obtained by original investigation, and that his appointment shall be contingent upon the continuance of such investigation. And I declare that the above desire shall not be construed as a trust and bind the trustees to establish a professorship; but in case it shall be deemed advisable such money may be applied in such other way as the trustees for the time being may think fit, provided such money is only used for the purpose of promoting Science." The late Mr. Langworthy deserves credit not only for his liberality, but for the sound and advanced views he held as to how Science should be taught, and as to the necessity of encouraging original research in connection with the chairs of Science in our Universities. Mr. Langworthy has also bequeathed 10,000*l.* each to the Salford Library and Museum, and to the Manchester Grammar School, in the latter case for the purpose of founding twenty scholarships.

THE Chair of Chemistry in the University of Glasgow is vacant. We hope the Home Secretary in filling up the vacancy will, in the spirit which urged the late Mr. Langworthy to make the magnificent bequest above referred to, show by the appointment he makes the appreciation in which he holds original research. It is now high time that it should be distinctly understood that no man deserves to be appointed to a Chair of Science in any of our Universities unless he has shown that he has that knowledge of his subject which can only come from original investigation.

THE Professorial Chair of Physiology in University College, London, has become vacant by the resignation of Dr. Sharpey, who has held it since the year 1836.

SIGNOR L. M. D'ALBERTIS, the distinguished Italian traveller, who has lately penetrated into the mountains of New Guinea, and discovered the remarkable Bird of Paradise which bears his name (*Drepanornis albertisi*), has just returned to this country from Sydney, *viâ* San Francisco, bringing with him his large collection in every department of natural history which he formed during his expedition.

WE would call attention to the Swiney Course of Lectures on Geology which are at present being delivered by Dr. W. B. Carpenter, F.R.S., in the Middle Class School, Cowper Street, Finsbury. The course was commenced last Thursday, and will be continued on Mondays and Thursdays at 8 P.M.; there will be twelve lectures in all. We are sure that many of our London readers, on being made aware that such a course of lectures is being delivered by such an authority, will be glad to take advantage of the opportunity, especially as the lectures are free to the public.

THE first of the course of lectures at the Zoological Gardens given in pursuance of the provisions of the Davis Trust, was delivered on Tuesday the 14th, by Mr. P. L. Sclater, being an Introductory Lecture on the animals in the Gardens, of which he gave many particulars that seemed greatly to interest the audience. Last Friday Mr. Sclater gave the first of his course of four lectures On the Geographical Distribution of Mammals, in which he dealt with the general laws of the distribution of animals on the globe. Both lectures were well attended, the picture gallery being nearly full.

AT the annual election to Mathematical and Physical Science Postmasterships in Merton College, Oxford, early in October an election will be made to two Physical Science Postmasterships, each of the value of 80*l.* a year, and tenable for five years from election, provided that the person elected do not accept any appointment interfering with the full course of academical studies. There is no limit of age, but candidates, if already members of the University, must not have exceeded six Terms from Matriculation. The persons elected, if not members of the University, will be required to pass the University Examination for Responsions within a year of election. The subjects of examination will be Chemistry and Physics. There will be a practical examination in Chemistry. Candidates will have opportunities of giving evidence of a knowledge of Biology; but it must be borne in mind that in such cases the examiners will look for evidence of an acquaintance with the principles of Chemistry and Physics equal in extent to that which is required in the Preliminary Honour Examination in the Physical Science School. A paper will be set in algebra and elementary geometry, which, *cæteris paribus*, will be of weight in the election to Postmasterships. Further information may be obtained from the Tutor in Physical Science.

MR. R. HIND, writing to the *Times*, sends the positions of two telescopic comets, discovered within the last ten days. He says:—"The first was detected by Prof. Winnecke, at Strasburg, on the morning of April 12. It is a diffused nebulosity, about four minutes in diameter, somewhat extended on the side opposite the sun. Our observations during the past night give the following place:—April 21, at 3h. 22m. 9s. A.M., mean time at Twickenham—right ascension, 20h. 50m. 41·6s.; polar distance, 88° 10′ 50″; present diurnal motion about 5′ in R.A., and 1° 5′ in P.D., both decreasing. The second comet was found by M. Coggia at Marseilles, on April 17. It is much smaller than the above, but has a strong nuclear condensation. Last evening its observed position was:—April 20, at 9h. 47m. 15s. mean time—right ascension, 6h. 25m. 15·6s.; polar distance, 20° 15′ 23″. Its motion is slow, towards the south-west.

THE instruments used by Dr. Livingstone in his last journey, a sextant, thermometer, and chronometer, are still exhibited in the map room of the Royal Geographical Society, together with some of his maps made in 1856-7. Those who have not before seen any of the maps will be interested in noticing the great care and neatness with which the work is done, and the amount of information crowded into them. There are also several portraits of the traveller taken at different periods.

AT the last meeting of the Linnean Society, Dr. Masters and Messrs. Hiern and Maw were appointed to represent the Society at the forthcoming congress of botanists in Florence.

THE removal of the Library of the Geological Society from Somerset House to Burlington House, has been completed, and it is hoped that by the 29th it will be opened to Fellows.

MR. LEONARD LYELL, B.Sc., has been appointed Professor of Natural Science in the University College of Wales.

THE Brothers Henry, astronomers at the Paris Observatory, have invented a modification of Leon Foucault's process for testing his telescopic glass mirrors. They are using that process at Secretan's in the construction of lenses used for dioptric astronomical instruments. One instrument constructed by them has been tried at the observatory and proved highly satisfactory; an object of an inch is equal to one of two inches when the surface has been worked under their optical supervision. They reject every part of glass which is not perfect. The first *lunette astronomique* so constructed has been sold.

IN the last sitting of the Academy, M. Becquerel, senior, one of the greatest electricians of the age, was presented with a medal in commemoration of the Fiftieth Anniversary of the Academy, of which he became a member four years afterwards. In 1824 the sittings were private, and only open to a very few learned persons. The admission was considered to confer a great honour, and was a step preliminary to membership. It was only in 1834 that the secrecy was removed on the proposition of Arago; Biot raised an opposition to it, but was outvoted. The publicity of sittings was coupled with the publication of *Comptes Rendus*, a weekly journal, exclusively devoted to the papers read before the Academy, and which has rendered immense services for a period of thirty-nine years.

WE very much regret that Sir John Lubbock's bill for the Preservation of Ancient Monuments was thrown out of Parliament last week by a very considerable majority. Patriotism seems to be at a discount in the House of Commons.

PROF. BASTIAN, of Berlin, has received favourable news from the German expedition on the west coast of Africa. Dr. Gussfeldt, who is at the head of the expedition, has advanced into the interior, and reached the Fangela country, which, it is believed, is the right point for further advance into Central Africa. The travellers at the latest dates were at the station of Chinchato, and were busy with the preparations for the more important expedition.

THE German exploring expedition into the Libyan Desert, under the leadership of Gerhard Rohlfs, returned to Cairo on April 17.

MM. ANDRE and Rayet are at present publishing, at Gauthier Villars', a work on "The History of Astronomical Observatories." The first part which is on sale is devoted to British observatories. The learned astronomers remind their countrymen that at the end of the last century France had a greater number of astronomical establishments than all other countries. The same thing can now be said of Great Britain.

MR. HARRISON, as President of the Institution of Civil Engineers, will give a *conversazione* on Tuesday, May 19, in the west galleries of the International Exhibition at Kensington, which have been kindly placed at his disposal by H.M.'s Commissioners. As in the two preceding years, models of engineering works and of recent scientific inventions will be transferred to the west picture galleries from other portions of the Exhibition, and these will be supplemented by similar objects specially lent for the occasion.

DR. CARPENTER has replied to Mr. Carter's letter to Prof. King on the structure of the so-called *Eozoon canadense*. He complains that Mr. Carter makes his charges without having, according to his own admission, read what has been written in favour of the view of the organic origin. In support of this view the examination of specimens by Prof. Schultze at the end of last year is referred to, by which he was completely satisfied as to the Forameniferal character of Eozoon. Dr. Carpenter says he does not pretend to affirm that the doctrine of the Forameniferal nature of Eozoon can be *proved* in the demonstrative sense; but he does affirm that the convergence of a number of separate and independent probabilities all accordant with that hypothesis, while a separate explanation must be invented for them on any other hypothesis, gives it that *high probability* on which we rest in the ordinary affairs of life, in the verdicts of juries, and in the interpretation of geological phenomena generally.

The Society for Promoting Christian Knowledge has begun to issue a series of "Manuals of Elementary Science." Is it to be regarded as a sign of the times that this Society as a publishing body is devoting to the spread of a knowledge of Science funds which have been avowedly collected for the purpose of "promoting Christian knowledge"?

THE re-mapping of England by the Geological Survey, giving the drift in its various divisions is steadily progressing, and in a short time a large part of Lancashire will be published. The quarter sheets, numbered by the survey 81 N.W., 88 S.W., 89 S.E., 90 S.E., 91 S.W. are engraved and in the hands of the colourist, and the work for 91 S.E., 90 N.E., 89 N.W. has been completed and the maps are in the engravers' hands. The sheet N.E. Somerset, and the London district have been ready some time. The old maps giving the rock mapping will continue on sale, for information that cannot be so readily gained in any other way arises from a comparison of the mapping of the rock with that of the surface drift.

ACCORDING to the Abbé David, the Chinese river Hangkiang, until lately almost unknown, is an important river of commerce, traversed by vessels of every size. A considerable portion, however, is difficult of navigation, owing to the existence of numerous rapids and many rocks.

THE death of Rev. John Bachman is announced as having taken place at Charleston on February 24. In the decease of this gentleman, Science loses one of the oldest of American naturalists, and one who has been quite prominent in the history of American zoology. He is well known from his association with Mr. Audubon in the preparation of the great work on the North American mammals, of which one edition was published, in folio, at 400 dols., and another, in quarto, at 40 dols. This, as far as its illustrations and biographies are concerned, still forms the standard treatise on the subject, although the systematic portion has been in a measure superseded by later and more critical investigations. It was, however, preceded by several monographic papers upon squirrels, hares, shrews, and other species, and also by papers upon the seasonal and other changes in colour in birds and mammals. Dr. Bachman's friends claimed for him the distinction of having been the first person in the United States to practise the art of artificial impregnation of fish, although this is stoutly contested by Dr. Garlick and other writers.

MR. R. B. WALKER writes from Corisco Bay, in Western Africa, in regard to a young gorilla which he had alive for some time, and hoped to forward to the Zoological Society of London. Contrary to the usual assumption in regard to this species, the specimen in question proved to be extremely docile and perfectly tame. When first purchased it was shy and suspicious, but not spiteful. At the expiration of about a week it was led around without resistance, and it ate whatever eatable thing it could lay its hands on, including a basin of condensed milk with a raw egg beaten up in it. It was quite tame, eating, sleeping, and playing with a large bull-terrier, the two animals being constantly together. It unfortunately disappeared one night, and was supposed to have fallen overboard.

THE forthcoming number of Petermann's *Mittheilungen* will contain the conclusion of the account of the return journey of Count Wiltschek's Arctic expedition through North-east Russia, and some remarks on the geognostic survey map of the coast of the Waigatt Strait in North Greenland, between Disco Island and the mainland, by M. Steenstrup. The number will also contain an account of Gosse and Warburton's travels through West Australia (recently referred to in NATURE), accompanied, of course, by an excellent map.

A ROMAN COMPANY, we learn from *La Nature*, proposes to lay a railway between Naples and Mount Vesuvius.

WE would direct the attention of our physiological readers to a short paper which has just appeared in the "Proceedings of the Royal Society," by Mr. E. A. Schäfer, on the Intracellular Development of Blood-Corpuscles in Mammalia, in which he shows, in the subcutaneous tissue of the new-born rat, how the red corpuscles, statically developed together with the primitive capillaries, become the dynamically circulating blood-discs of the older animal, as in the *area vasculosa* of the embryo chick.

WE are glad to see that the Leeds Naturalists' Field Club and Scientific Association has just concluded the most successful year of its existence, its operations during the past twelve months having been attended by most gratifying and steady progress. We have received the syllabus of a number of lectures (by Mr. L. C. Miall) and excursions to take place during the present and next months, illustrative of the geology of the West Riding. There will be four lectures, illustrated by seven excursions.

WE have received a short and carefully compiled sketch of the Geology of the County of Suffolk, written by Mr. J. E. Taylor, of the Ipswich Museum, a gentleman who, by the popularity of his lectures and the large audiences which he draws, is doing more than anyone to develop a genuine and lasting love for natural history in that part of the country.

MESSRS. LONGMANS & Co. have in the press a "Manual of Industrial Chemistry." It is a translation of Profs. Stohmann and Engler's German edition of Payen's "Précis de Chimie Industrielle," by Dr. J. D. Barry. It will be edited and supplemented with chapters on the chemistry of the metals, by Dr. B. H. Paul, and will be copiously illustrated. The same publishers also have nearly ready an "Introduction to Experimental Physics, Theoretical and Practical," by Adolf F. Weinhold, Professor in the Royal Technical School at Chemnitz, translated and edited by Benjamin Loewy, F.R.A.S.; it will also have a preface by Prof. G. C. Foster, F.R.S., and be illustrated with numerous woodcuts.

THE additions to the Zoological Society's Gardens during the past week include a Mourning Kangaroo (*Halmaturus luctuosus*) from the south of New Guinea, deposited by Signor L. M. D'Albertis; two Gold Pheasants (*Thaumalea picta*) from China, presented by the Rev. A. B. Frazer; a White-cheeked Flying Squirrel (*Pteromys leucogenys*) from Japan, presented by Mr. A. Gower, H.B.M. Consul at Kobe; a Common Fox (*Canis vulpes*) from Russia, presented by Mr. J. W. Ouchterlony; a Long-nosed Crocodile (*Crocodilus cataphractus*) from West Africa, presented by Mr. H. T. Cooper; and a Red Kangaroo (*Macropus rufus*), born in the Gardens.

SCIENTIFIC SERIALS

THE *Geographical Magazine*, No. 1, April.—Such is the title of the successor to *Ocean Highways*, which a "Notice" informs us, "has been discontinued," Mr. C. R. Markham, C.B., F.R.S., "having taken the editorship of the *Geographical Magazine*, issued under new proprietorship." We certainly prefer the outside appearance of the new magazine to that of its predecessor, the cover being much more tasteful and business-like; it has made an excellent start also as to contents. The first article, accompanied by a map, is on "The Basin of the Helmund," which includes all the streams that flow down into the great lake or swamp of Sistan, and lies athwart the line of advance from the north towards India. A large part of this area is still entirely unknown, and the article gives an account of the existing materials whence a knowledge of the region can be obtained. The next article gives an interesting account of the Russian Staff-Captain N. M. Prshevalski's Travels in Mongolia in 1870–73. Captain Prshevalski "has acquired most valuable scientific information which, combined with the map he intends shortly to publish, will shed a flood of light on the geography, zoology, and botany of Mongolia and Northern Thibet." This is succeeded by an article on "The Hydrographical Department of the Admiralty," giving a brief history of this most important department of the naval service, and a sketch of its labours. The article contains some valuable hints as to how the department might be made more efficient than it is if Government would only be a little more wisely liberal. An article on the Island of Hormuz, by Lieut. A. W. Stiffe, gives an account of the present state of the island and of the remains of its ancient grandeur. We can only name the other original